Application No. To Be Assigned

PATENT

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Applicant	:	Olobo Jonathan OBAJE
Application No.	:	To Be Assigned
Filed	:	February 15, 2002
Title	:	TRANS-ACIDOLYSIS PROCESS FOR THEPREPARATION OF SURFACE ACTIVE FATTY-ACID ESTERS
Grp./Div.	:	To Be Determined
Examiner	:	To Be Determined
Docket No.	:	21429-12

PRELIMINARY AMENDMENT

2029 Century Park East, Suite 3800
Los Angeles, California 90067--3024
January 15, 2002

Assistant Commissioner for Patents
Washington, D.C. 20231

Commissioner:

Please amend the above-identified application as follows:

Attached are replacement pages 22, 23 and 24. Also attached are marked up copies of pages 22, 23 and 24 as submitted by applicant.

REMARKS

In view of the foregoing amendment, consideration and allowance of this application is respectfully requested.

Respectfully submitted,

OPPENHEIMER WOLFF & DONNELLY LLP

By _____
Charles Berman, Esq.
Reg. No. 29,249
310-788-5098

/sfc

11 The process of preparing carbohydrate fatty-acid esters of Claim 1, further comprising the steps of:-

(e) librating free hydroxyl groups by partial hydrolysis of the C2- or C3-acylated carbohydrate fatty acid ester in the presence of an acid catalyst for a predetermined period of time to obtain carbohydrate fatty acid ester having free hydroxyl groups of predetermined HLB values.

12. The process of preparing carbohydrate fatty acid esters of claim 11, wherein the HLB values of the product carbohydrate fatty-acid esters are in the range of 8 to16.

13. The process of preparing carbohydrate fatty-acid esters of Claim 1, wherein step (a) is processed at a temperature ranging from 60 to 95 degree C.

14. A process of preparing carbohydrate fatty acid esters comprising the steps of:

(a) reacting acylated carbohydrate with free fatty acid in the presence of an acid catalyst, under reduced pressure;

(b) decolorizing and separating out the unreacted fatty acid, from the reaction mixture obtained in step (a);

(c) precipitating out the unreacted acylated carbohydrate from the reaction mixture obtained in step (b);

(d) removing the unreacted free fatty acids and carbohydrate esters of low molecular-weight carboxylic acids during purification, and recycling the removed unreacted free fatty acids and carbohydrate esters to the starting reactant mixture; and

(e) librating free hydroxyl groups by partial hydrolysis of the acylated carbohydrate fatty acid ester in the presence of an acid catalyst for a predetermined period of time to obtain carbohydrate fatty acid ester having free hydroxyl groups of predetermined HLB values.

15. Carbohydrate fatty-acid esters produced in accordance with the process of claim 1 or 14.

16. The process according to claims 1 or 14 wherein the reactant carbohydrates include the group consisting of partially or peracylated mono-, di- and tri-saccharides in which the monosaccharide units is selected from the group of furanosyl, pyranosyl or a C2-C6 open-chain structure.

17. The process according to any one of claims 1, 14 or 16 wherein the acyl group in the reactant acylated carbohydrates is acetic or propanoic acyl group.

18. The process according to claims 1 or 14 wherein, the acid catalysts includes

sulphuric or camphorsulfonic acid, in the case of the monosaccharides; or boron trifluoride diethyl etherate, alkyl sulphonic acid polysiloxanes and tosylic acid, in the case of the di- and tri-saccharides.

19. The process according to claims 1 or 14 wherein the workup solvents includes water, ethanol, iso-propanol, n-propanol or ethyl acetate.

20. The process according to claims 4 wherein the extraction solvent is hexane.

21. The process according to claims 1 or 14 wherein the free fatty acids have C6–C22 chain-length, with zero, mono or di-unsaturations.

22. The process according to claims 11 or 14 wherein the hydrolysis acid catalyst is trifluoroacetic acid.

23. The process according to claims 11 or 14 wherein the partially hydrolysed carbohydrate fatty acid esters are further separated by stage cooling, at controlled temperature ranging from –15 to 10 degree C, according to their degree of acylation.

11 The process of preparing carbohydrate fatty-acid esters of Claim 1, further comprising the steps of:-

(e) librating free hydroxyl groups by partial hydrolysis of the C2- or C3-acylated carbohydrate fatty acid ester in the presence of an acid catalyst for a predetermined period of time to obtain carbohydrate fatty acid ester having free hydroxyl groups of predetermined HLB values.

12. The process of preparing carbohydrate fatty acid esters of claim 11, wherein the HLB values of the product carbohydrate fatty-acid esters are in the range of 8 to16.

13. The process of preparing carbohydrate fatty-acid esters of Claim 1, wherein step (a) is processed at a temperature ranging from 60 to 95 degree C.

14. A process of preparing carbohydrate fatty acid esters comprising the steps of:

(a) reacting acylated carbohydrate with free fatty acid in the presence of an acid catalyst, under reduced pressure;

(b) decolorizing and separating out the unreacted fatty acid, from the reaction mixture obtained in step (a);

(c) precipitating out the unreacted acylated carbohydrate from the reaction mixture obtained in step ~~(a)~~ (b);

(d) removing the unreacted free fatty acids and carbohydrate esters of low molecular-weight carboxylic acids during purification,

and recycling the removed unreacted free fatty acids and carbohydrate esters to the starting reactant mixture; and

(e) librating free hydroxyl groups by partial hydrolysis of the acylated carbohydrate fatty acid ester in the presence of an acid catalyst for a predetermined period of time to obtain carbohydrate fatty acid ester having free hydroxyl groups of predetermined HLB values.

15. Carbohydrate fatty-acid esters produced in accordance with the process of claim 1 or 14.

16. The process according to claims 1 or 14 wherein the reactant carbohydrates include the group consisting of partially or peracylated mono-, di- and tri-saccharides in which the monosaccharide unit(s) ~~could be a~~ is selected from the group of furanosyl, pyranosyl or a C2-C6 open-chain structure.

17. The process according to claims 1, 14 or 16 wherein the acyl group in the reactant acylated carbohydrates is acetic or propanoic acyl group.

18. The process according to claims 1 or 14 wherein, the acid catalysts includes sulphuric ~~and~~ or camphorsulfonic acid~~s~~, in the case of the monosaccharides; ~~and~~ or boron trifluoride diethyl etherate, alkyl sulphonic acid polysiloxanes and tosylic acid, in the case of the di- and tri-saccharides.

19. The process according to claims 1 or 14 wherein the workup solvents includes water, ethanol, iso-propanol, n-propanol or ~~and~~ ethyl acetate.

20. The process according to claims 4 wherein the extraction solvent is hexane

~~21. The process according to claims 1 or 14 wherein the reactant free~~ fatty acids have C6–C22 chain-length, with zero, mono or di-unsaturations.

22. The process according to claims 11 or 14 wherein the hydrolysis acid catalyst is trifluoroacetic acid.

23. The process according to claims 11 or 14 wherein the partially hydrolysed carbohydrate fatty acid esters are further separated by stage cooling, at controlled temperature ranging from –15 to 10 degree C, according to their degree of acylation.